





FP7-SPACE 2013-1 - Grant n° 606983

D11.10 ERMES Italian open days

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WP11: Dissemi	ination and promotion	Dimitris Katsantonis (DEMETER)					
Deliver	able Number	Deliverable Name					
I I	D11.10	Italian Endusers open days report					
Expected	d Delivery Date	Actual Delivery Date					
01	/02/2017	02/02/2017					
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Reviewers	Reviewer 1 Project Coordination Team						
	Reviewer 2 Project Coordination Team						
Version		1.0					
State		Final					
Dissemination Level		Public					





Document History

Actor	Date	Version	Description
All authors	25/01/2017	1.0	First Draft
Lorenzo Busetto	28/01/2017	1.1	Revision and improvements; addition of Usability analysis results
Project Coordination Team	03/02/2017	1.1	Approval

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This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement n° 606983.

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Executive summary

The main results and achievements of the ERMES project were presented to Italian end-users belonging to various branches of the agro-sector (including both the Local and Regional levels) during dedicated open days. In fact, the Italian Open day was divided into two parts depending on the type of the service.

The first one was dedicated to the local end-users (farmers and groups of farmers and members of the agro-business such as agronomists (government or private), millers, traders, etc.) and took place on the 14th of December 2016. The total number of the attendees were 40 in the Italian Open day at Local level. The partners responsible for the event presented the ERMES achievements and the developed products and services. The local case studies were presented during the event, and three collaborating farmers described their experiences in the collaboration with the project, two from Italy and one from Greece. At the end of the event, dedicated Open day questionnaires were provided to the attendees, who evaluated the quality of the Open day itself and more importantly the ERMES products and services presented. Furthermore, they evaluated the usability of the ERMES geo-portal and *Agrinotebook* tools. The most important conclusions derived by the questionnaires was that the majority of the users consider that the ERMES products are potentially able to provide technological support to optimize rice production at farm scale, while they were willing to pay an amount of €1 to €10 per hectare in order to gain access to the services.

The second Italian Open day was dedicated instead to the regional end-users, and it was held in Milano in IREA-CNR premises in 12/01/2017. The meeting was organized by personnel of the ERMES consortium (CNR IREA and UMIL), and attended by representatives of the different ERMES end-users as well as from other Institutions interested in the ERMES results. The main objectives of the meeting were *i*) to present the main products and services developed in the framework of the ERMES project concerning rice crop monitoring at regional/rice district scale, as organized in the ERMES Regional Rice Service (RRS), and *ii*) to collect users' feedback concerning the provided services and the interest for their continuation after the end of the project, as well as to discuss possibilities for the improvement of their usefulness in the framework of the different end-users.

Both events were successful in terms of interest and participation, which was satisfactory: This deliverable provides a brief report of the two open days, focusing on their agenda and on the interactions occurred with end users. The presentations used during the meetings are also reported in Annex, as well as the questionnaires compiled during the Local open day.





1 Italian Open Day at local level

The final ERMES Local Service open day was held on 14th of December 2016 at the premises of the commodity exchange of Mortara (PV, Italy).

The open day was organized by UMIL and CNR-IREA personnel and had the main objective of discussing and demonstrating products and services developed during the ERMES project.

The open day was performed with the participation of the Project Coordinator and some representatives of the Project Consortium partners from i) the Institute for Electromagnetic Sensing of the Environment of the National Research Council (Italy), ii) the University of Milan (Italy), iii) the Cereal Institute of the Hellenic Agricultural Organization (Greece), iv) the Aristotle University of Thessaloniki (Greece) and v) SARMAP (Switzerland). It was devoted to a bilateral meeting and open discussion with end-users.

During the day, representatives of the Project Partners provided information about the various ERMES Local products and services, as well as a summary of the demonstration activities undertaken during the previous three rice cultivation years in collaboration with local rice farmers (§ 1.1, 1.2).

The meeting allowed also to collect end users responses to dedicated questionnaires aimed at assessing the perceived usefulness of ERMES products and services (§ 1.4), and the usability of ERMES tools (Agrinotebook and Local Geoportal - § 1.5).

1.1 Analytical description of the Italian Open Day event at Local level

The agenda of the Local level open day was organized into five sessions:

- **Session 1**: Welcome section and general notions of the ERMES Project.
- Session 2: Presentation of the results obtained during the three years of the Project (Services and products developed) and demonstration of the ERMES Local Geoportal and AgriNoteBook SmartApp
- **Session 3**: Description of experience of Italian Rice farmers. Two rice farmers involved into the ERMES Project as final end-users under Service Level Agreement reported their experiences in the use of ERMES products.
- **Session 4**: Description of experience of Greek Rice farmers: One rice farmer involved into the ERMES Project as final end-user under Service Level Agreement reported his experience in the use of ERMES products.
- **Session5**: Open discussion and collection of feedback





This document provides a recap of the main contributions and discussions arisen during the different sessions of the agenda, separated by the main meeting sessions.

The attendants (ANNEX II) who presented the main results obtained by the application of the ERMES local products are reported below:

- Mirco Boschetti (CNR-IREA),
- Lorenzo Busetto (CNR-IREA),
- Alberto Crema (CNR-IREA),
- Francesco Nutini (CNR-IREA),
- Monica Pepe (CNR-IREA),
- Roberto Confalonieri (UMIL),
- Tommaso Guarneri (UMIL),
- Francesca Orlando (UMIL),
- Valentina Pagani (UMIL),
- Francesco Holectz (SARMAP),
- Dimitris Stavrakoudis (AUTH),
- Dimitrios Katsantonis (DEMETER),
- Riccardo Braggio (Italian local end user),
- Carlo Franchino (Italian local end user),
- Christos (Takis) Plastiras (Greek local end-user).

1.1.1 Session 1: Welcome session and general notions of the ERMES Project:

UMIL Welcome - Roberto Confalonieri

Welcome to the open day participants by the Institution organizing the event.







Image 1: Dr. Roberto Confalonieri welcome speech starts the open day

Project Coordinator Welcome - Mirco Boschetti (CNR-IREA)

Welcome to open day participants, general information about the ERMES project and the daily agenda, round table of presentation of attendees.



Image 2: Dr. Mirco Boschetti welcomes the attendance to the open day





1.1.2 Session 2: Presentation of the results obtained during the three years of the Project (Services and products developed) and demonstration of the ERMES Local Geoportal and AgriNoteBook SmartApp

Main speakers: Monica Pepe, Alberto Crema (CNR-IREA)

The session was aimed at summarizing products and services developed at local scale during the ERMES project. Alberto Crema showcased the main ERMES products that can be directly used by the local stakeholders through a demonstration of the ERMES Local Geoportal. In particular, the following products were showed:

- Rice Modelling at Local Scale (EP_L1): intended to provide farmers information related to the state of their own fields (i.e. phenology), in order to support them in management practices (e.g. to guide/manage nitrogen fertilization or to evaluate the right period for blast treatments), evaluating different production levels in relation to meteorology, soil status and agro-practises and to provide insurance companies with information on yield variability at farm scale.



Image 3: Dr. Monica Pepe is demonstating ERMES products and services

- High Resolution maps on rice spatial variability (Constant Pattern Maps – EP_L2): devoted to the provision of high resolution (HR) maps useful to provide farmers information on uniform management zones, allowing to support their agronomic-management practises, and in particular the basal start-of-year fertilization, as well as for defining at the local scale elementary units for WARM model simulations either at the parcel or the within-parcel scale.





- Very High Resolution maps on rice spatial variability (Seasonal Pattern Maps EP_L3): devoted to the provision of maps useful to support farm management. In particular, maps that quantify the within-field variability of the crop in key moments of the crop cycle (e.g. emergence, tillering, panicle initiation etc.) are being derived, providing farmers with the spatial location of anomalies within the field in order to support management practices such as Variable Rate Technology (VRT) fertilization, which van be key for improving rice yield as well as for allowing more environmentally sustainable production.
- High resolution Biophysical parameters maps (LAI Maps EP_L4) provide high-resolution multitemporal LAI raster maps exploiting decametric optical and SAR both of which can be used for crop monitoring purposes.



Image 4: Dr. Alberto Crema is demonstrating ERMES products and services





1.1.3 Session 3: Italian Rice farmers experience in ERMES products exploitation.

Main speakers: Carlo Franchino, Riccardo Braggio (Local Italian end-users)

They presented their experience and the results obtained with the application of the ERMES local products. Both users were very satisfied by the results obtained within the service, in particular for what concerns the use of VRT fertilization for improving homogeneity of final yield while reducing or optimizing management costs.



Image 5: Mr. Carlo Franchino (Italian farmer) is demonstrating his experience from the collaboration with the ERMES project



Image 6: Mr. Riccardo Braggio (Italian farmer) is demonstrating his experience from the collaboration with ERMES project





1.1.4 Session 4: Greek Rice farmers experience in ERMES products exploitation.

Main speakers: Christos Plastiras, Dimitris Stavrakoudis, Dimitrios Katsantonis

Greek farmer Christos Plastiras shared his experience on the ERMES project with the Italian farmers. With the aid of D. Katsantonis and D. Stavrakoudis, he presented also results of a preliminary study for assessing the potential reduction of costs achievable in Greece through optimization of fertilization practices based on ERMES local products.

He was enthusiastic of the support that the ERMES local products could give to his farm. In particular, he stated that the estimation of the rice phenological phases can greatly support the organization of the contractor's farm activities, given the wide extension of his fields.



Image 7: Mr. T. Plastiras and Dr. D. Katsantonis, with the help of Dr. M. Boschetti are demonstrating the 2016 accomplishments of the collaboration of the Greek farmer with the ERMES project

1.2 Conclusions of the Italian Open day at Local level

Both collaborating farmers and end-users were strongly satisfied by the products. In particular, Carlo Franchino, thanks to the availability of instruments able to interpret the remote sensing maps, could take full advantage of the product, modulating the fertilizations on the basis of different vegetative vigor. On the other hand, Riccardo Braggio could partially benefit from the products, by





slowing the tractor velocity in the zones where the vegetative vigor, as shown by the remote sensing maps, was lower.

On the basis of open discussions held during and after the presentations, the attendees at the open day seemed to be really interested in the described services and products, with particular reference to the use of VRT techniques and their potential usefulness for reducing costs/improving revenues of rice cultivation. On other topics, they asked information about the methodology used to estimate the blast risk infections and the inputs required by the models. They also asked information about the possibility to identify the areas covered by weeds among the rice plants using remote sensing information, and to obtain rice cover maps at farm level using the information provided by SARMAP partners. Finally, they were interested about the possibilities offered by the SmartApp and the ERMES geoportal, in particular if the information inserted into the App can be directly moved to a private section of the Local geoportal.

1.3 Media attention of the Italian Open Day at Local level

The Italian Open Day was presented in the official newspaper of Ente Nazionale Risi, called "Il Risicoltore". The original article is reported in ANNEX V.

1.4 Report on the participants' questionnaires of the Italian Open day at Local level

The Open day dedicated questionnaires were developed by DEMETER (ANNEX IV) and after the agreement with the Coordinator, they were shared to the country-specific responsibles for each Open day and translated into their native language.

The total number of questionnaires in the Italian open day were 7 (three farmers, two agronomists and two did not specify). Among the three farmers, one was acting on quite a large number of hectares, with high yielding varieties and optimized management, given the high yield obtained in the last three years. In the other two cases, average total production was lower, due to the smaller cultivated area and the lower yields. No relevant differences were found among the three farms in terms of unitary value of the product on the market.

In general, (five out of seven, two did not answer), interviewees declared that ERMES local services – and more in general technological innovations – are potentially able to provide farmers with technological support to optimize rice production at farm scale. Indeed, all interviewees declared that they would pay for ERMES services, although the value per hectare ranged from 1 to 10 euros. This is coherent with their consideration on the fact that it would be better to use farmer







consortia to access and spread information (to share service costs). In particular, the services that were considered as the most useful were related to systems for supporting the distribution of fertilizers (to increase yields and make them more uniform) and for predicting the risk of blast infection. Moreover, other services were considered as interesting by some of the interviewees, like those related with forecasting product value, production of yield maps, and prediction of phenological stages to support development-related agronomic practices. For the latter, the interest is likely motivated by the fact that they can be used to estimate phenological stages' occurrence empirically through direct observation of the plants, this being a time consuming and in some development phases –uncertain practice when the farmer/technician is not properly trained. Information on phenological stages are used also to identify the moment(s) when topdressing nitrogen fertilization should be applied. This is usually done at the beginning of tillering and at the panicle initiation. While the first stage is easy (fast) to detect, the second requires entering the field, harvesting some plants and dissecting them to identify the first internode (it should be no longer than 1 cm). This explains why farmers are interested in a dedicated service to understand when the top-dressing fertilization would assure the largest benefit in terms of productivity. For the same reason, interviewees are interested in alerting systems for the risk of blast infection. Indeed, in most cases, agro-chemical distribution is largely based on the moment when the first symptoms (necrotic lesions) appear on the leaves (through direct observation of the plants in each field), which could be too late to truly avoid damage. Concerning yield maps, the interest (although less pronounced) is justified by the absence of similar products on the market. Regardless of the service, the preferred channels to transfer ERMES results to farmers are via consultancy services (directly provided by ERMES or by farmers organizations collaborating with

the project) and via IT devices. In particular, a dedicated online geo-portal and consultants (agronomists) are considered as crucial to effectively disseminate ERMES products and services.

1.5 Analysis of ERMES tools usability studies

Furthermore, another two types of questionnaires were prepared by UJI personnel to evaluate the Geo-portal and the AgriNoteBook tools according to the System Usability Scale¹. This scale was selected as a quick and easy way to reliably measure usability according to a standard. The 10question questionnaire proposed by UJI was translated into Italian and the two questionnaires were distributed to end users. Results were processed according to Brooke's description, giving a

¹ Brooke, J. (1996). SUS-A quick and dirty usability scale. Usability evaluation in industry, 189(194), 4-7.





usability score between 1 and 100 per participant (Note that, although the scores are between 0 and 100, they are not percentages, but percentile rankings).

During and after the last Italian Open day, seven usability questionnaires were collected for both the Geoportal and AgriNotebook. Respondents included both farmers (5) and ERMES field operators who assisted some of them in the use of ERMES products (2).

Average scores were respectively 71.1 (Geoportal) and 67.5 (Agrinotebook) (Table 1-1, Table 1-2 - Annex IV). To interpret these scores, we compare them with the adjective scale rating proposed by Bangor et al², which reports a highly correlated mapping between mean SUS scores and a 7 scale adjective rating (worst imaginable, awful, poor, ok, good, excellent, best imaginable). According to this scale, both the geoportal and AgriNoteBook score are in between OK and good, which can be considered a satisfying result. It is worth mentioning that the very low scores reported by two of the farmers concerning Agrinotebook are most probably due to the fact that they experimented with one of the first prototypes of the App, and were not therefore aware of the substantial improvements made on it during 2016.

² Bangor, A., Kortum, P., & Miller, J. (2009). Determining what individual SUS scores mean: Adding an adjective rating scale. Journal of usability studies, 4(3), 114-123.





	Q1	Q2	Q3	Q4	Q 5	Q 6	Q7	Q8	Q9	Q10	Score
Italy											
User 1	5	5	3	5	4	1	5	1	3	3	62.5
User 2	4	3	1	1	3	3	1	4	1	1	45
User 3	4	1	4	2	4	2	3	2	4	3	72.5
User 4	5	2	3	4	3	2	3	2	3	4	57.5
User 5	3	1	5	1	4	1	4	2	5	1	87.5
User 6	4	1	4	2	3	2	4	2	4	1	77.5
User 7	5	1	5	1	4	1	4	1	5	1	95
Average											71.1

Table 1-1: Geoportal Usability analysis results

Table 1-2: Agrinotebook Usability analysis results

	Q1	Q2	Q 3	Q4	Q5	Q 6	Q7	Q8	Q9	Q10	Score
Italy											
User 1	3	4	1	2	3	5	1	3	1	2	32.5
User 2	4	3	2	4	3	1	2	4	3	5	42.5
User 3	4	2	3	4	3	2	3	2	4	3	60
User 4	5	2	4	2	3	2	4	2	3	3	70
User 5	3	2	4	1	3	2	4	1	4	1	77.5
User 6	5	1	5	1	5	1	4	1	5	1	97.5
User 7	5	2	4	1	4	1	5	1	5	1	92.5
Average											67.5







2 Italian Open Day at Regional level

The second Italian Open day was dedicated to the regional end-users, and it was held in Milano in IREA-CNR premises in 12/01/2017. The meeting was organized by personnel of the ERMES consortium (CNR IREA and UMIL), and attended by representatives of the different ERMES end-users as well as from other Institutions interested in the ERMES results. In particular, the following Institutions, involved in various ways in agronomic monitoring activities, were represented:

- Ente Nazionale Risi ENR (Italian organization responsible for rice cultivation monitoring and improvement), represented by Simone Silvestri (**SS** in the following);
- MARS (Monitoring Agricultural ResourceS) unit of the Joint Rearch Centre Ispra, represented by Lorenzo Seguini (LS);
- Lombardy Region (RL)/ ERSAF Lombardia Phytosanitary Service, represented by Beniamino Cavagna (BC), Mariangela Ciampitti (MC), Dante Fasolini (DF) and Stefano Bocchi (SB);
- Lombardy Region (RL) DG Agriculture, represented by Elena Brugna (EB)
- Cattolica Assicurazioni, represented by Lilia Storaru (LS)
- IPLA (ISTITUTO PER LE PIANTE DA LEGNO E L'AMBIENTE) s.p.a., represented by Fabio Giannetti (**FG**)

The main objectives of the meeting were:

- to present the main products and services developed in the framework of the ERMES project concerning rice crop monitoring at regional/rice district scale, as organized in the ERMES Regional Rice Service (RRS), and
- 2. to collect users' feedback concerning the provided services and the interest for their continuation after the end of the project, as well as to discuss possibilities for the improvement of their usefulness in the framework of the workflow of the different end-users.





2.1 Analytical description of the Italian Open Day event at Regional level

In the first part of the meeting the Project Coordinator Mirco Boschetti gave an introductory recap of the main objectives and achievements of the project, briefly describing both the Regional and Local ERMES rice services (presentation available at <u>http://www.ermes-fp7space.eu/wp-content/uploads/2017/01/ERMES Open Day Regional Introduction.pdf</u>).

Successively, ERMES personnel described the major achievements of the project concerning the development of different services/products useful for rice monitoring at regional scale. In particular, attention was dedicated to the main products of interest for the Italian regional end-users, as derived from the signed SLAs. A brief recap of the topics covered in the different presentations and of the ensuing discussion is given in the following.



Images 8: An overview of the attendance during the Italian Open Day at Regional level





2.1.1 Recap of main presentations

Mapping of rice crop distribution, flooding and irrigation practices from satellite images

Presenter: Daniela Stroppiana (IREA) – presentation available at <u>http://www.ermes-fp7space.eu/wp-</u> <u>content/uploads/2017/01/ERMES_Open_Day_Regional_Italy_RS.pdf</u>

This presentation focused on illustrating methods and results of activities related to the generation
of yearly maps of rice crop distribution, and of multitemporal maps of agronomical flooding from
satellite SAR and optical imagery. Those products were among the main interests of users ENR
and IPLA.

Near Real Time monitoring of growing season's conditions

Presenter: Lorenzo Busetto (IREA) – presentation available at <u>http://www.ermes-fp7space.eu/wp-</u> content/uploads/2017/01/ERMES Open Day Regional Italy RS.pdf

 This presentation focused on illustrating methods and results of activities concerning the Near Real Time monitoring of the rice growing season exploiting multitemporal NDVI / LAI satellite maps and meteorological and phenological maps derived from MODIS data. Those products were among the main interests of users JRC and RL.

ERMES regional monitoring services based on crop modelling solutions

Presenter: Roberto Confalonieri (UMIL) – presentation available at <u>http://www.ermes-fp7space.eu/wp-</u> content/uploads/2017/01/ERMES-open-day regiona Modelling.pdf

 This presentation focused on illustrating methods and results of activities concerning the regionalscale modelling of rice growing, with particular reference to products related to yield forecasting and daily risk estimation of rice blast infection. Those products were among the main interests of users ERSAF and ENR.

2.1.2 Open discussion on the developed services





During and after the presentations, ERMES users commented on the quality, usefulness and possible improvements of the different products and services. The main topics discussed are hereby briefly summarized.

Discussion concerning the rice crop and flooding mapping products

Evaluation of these products by the interested users was very positive. In particular:

- **FG** underlined the satisfying accuracy of the flood mapping products, also stressing the fact that the increased frequency of SAR observations, which will be made possible by the operativity of the Sentinel 1-B satellite, will help in further improving the usefulness of the product.
- **BC** underlined importance of the product to understand irrigation practices in the area, in relation to recent regulations on the use of specific phytosanitary products;
- SS agreed on the usefulness of the product, but pointed out that a limitation is related to its inability to verify fields' flooding in the later stages of the growing cycle. MB commented that usually rice fields are always flooded after a certain growing stage, but SS commented that this practice is now changing, and therefore being able to estimate flooding also on the later stages could be important. Information on when water for rice is most used/needed is crucial to assess possible conflicts in water needs. SS also commented that recognizing the different irrigation practices (e.g., false sowing) could provide insights on the current use of specific phytosanitary products.
- **FG** further commented that it is very important that the product is delivered very quickly, and in an easy-to-use format. Finally, he stressed out that while these kind of monitoring products are at this time exploratory, they will probably become somewhat mandatory in the framework of the new European Commission programming on agriculture starting 2020
- LB and BC commented that it would be useful for the product to be delivered to monitoring organizations of both Lombardy and Piedmont (the two largest rice-producing regions of Italy), although some fine-tuning could be needed to fit/address needs of the different organizations.







Image 9: Dr. R. Confalonieri is presenting at the Italian Open day at Regional level

Discussion concerning the monitoring and phenological products

Evaluation of these products by the interested users was positive. In particular:

- LS commented positively on the information concerning rice phenology provided in 2016, which was used as additional info for the production of MARS agro monitoring bulletins, and also on potentiality of the yield forecasting products (although due to a timing issue those data weren't delivered on time for operational use for the bulletins this year). He also stressed out that for MARS operational use it would be required/mandatory that the information is extended to all European rice producing areas, aggregated at NUTS1 NUTS0 level: in that case, MARS could really exploit the system and would be eventually interested in sustaining it also economically. On this, RC commented on the difficulty of extending the service to some of these areas (Eastern Europe and Portugal) due to the size of the areas planted with rice.
- LS also reported that the integration between RS and crop modelling done within ERMES is a very interesting activity, that MARS isn't really able to perform due to the lower spatial resolution of their elaborations

Discussion concerning the yield forecasting and rice blast risk analysis products





- LS commented positively on potential usefulness of the yield forecasting product for JRC-MARS institutional activities, in particular if extended to other countries (see above). RC also underlined the potential higher usefulness of the ERMES system for example, in Eastern Europe, where the cropping practices are far from standardized and variability in inter-annual yields is more influenced by weather conditions compared to Italy.
- **SS** commented that early information on current-year yield is useful, but also underlined that its usefulness would be probably limited just to its own Institution (ENR), while he thinks that other users would not be interested.
- BC and MC gave very positive feedback on the risk alerting products and on interaction with ERMES consortium in the two demonstration years. They also highlighted the importance to somehow improving the frugality of the product and its dissemination towards farmers. This will have to be addressed if the service is continued.
- SS also commented on the usefulness of the product and of its quality (as assessed by ENR on data concerning test areas). ENR would be interested in further developing the product and service in relation to activities already conducting in Piedmont region. To do this, it would be important to perform tests on rice fields were phytosanitary treatment for rice blast is not conducted. BC and MC commented that collaboration between ERSAF/RL and ENR on this topic would be of interest to them, although in the past it was very difficult.

2.2 Conclusions of the Italian Open day at Regional level

Results of the meeting demonstrated the perceived usefulness of ERMES regional products and services for the involved end-users, and provided very useful <u>feedback</u> for their improvement and extension after the end of the project.

Most of the user's found the ERMES products to fill gaps in data/information available at their own institution. Above all they recognized ERMES products and services to have the unique characteristic to be spatially distributed and delivered in near real time during the season over the regional territory, compared to more traditional sources of information, and therefore to be very useful for monitoring, managing and prevention activities. Some of the users have also actively included ERMES products in their decision chains and evaluated their contribution.





For the future all users agree on the need for continuity of the service provided within the project with some significant improvements/enlargements (e.g. more crops) dictated by the specific needs of each user.





Annex I: Press Releases, Invitation and Agenda

CHI SAMO EVENTI DOVE TROMA	ONALE RISI RANDI E AMASI PUBBLIDITÀ LEGALE	n ftin ä⊠
Cersa nel sile.		Q.
	home / eventi	Servizi in primo plano
Open day per il progetto ERMES tategoria: <u>Conveani</u> dove: Mortara - Borsa Merci - Piazza Trieste, 32 quando: mercoledi 14 dicembre 2016 telefono: 02/50316578 e-mail: <u>tommaso.guarneri@unimi.it</u> Mercoledi 14 dicembre presso la borsa merci di Mortara si svolger	à un incontro per mostrare i risultati del progetto	 Link a siti esterni Modulistica Newsletter "Buoni a casa" Prezzi e mercati Dati statistici Raccolta normativa
ERMES e le sue applicazioni nel distretto risicolo della iomellina e Programma dettagilato.		 FAQ Dove trovarci
	ERMES	 Servizi di Stoccaggio SAT - Assistenza tecnica agli agricoltori
	AN EARTH OBSERVATION MODEL BASED RICE INFORMATION	Analişi Servizio Sementi Abo Moltplicatori sementi di riso Pubblicazioni
	SERVICE	Rassena Stanna
		Assects Mattha

Figure 2.1 Invitationi to the open day from the website of Ente Nazionale Risi





Agenda of the Italian Open day at Local level



Un incontro per illustrare i risultati del progetto ERMES e le sue applicazioni nel distretto risicolo della Lomellina e discutere del contributo che può dare alle aziende risicole.

14 Dicembre 2016 - Ore 14.30

Borsa merci di Mortara - Piazza Trieste, 32 - 27036 Mortara (PV)

Programma della giornata

- i) Accoglienza e nozioni generali sul progetto ERMES
- Presentazione dei risultati ottenuti nei tre anni di progetto (servizi offerti, prodotti sviluppati)
- iii) Analisi dell'esperienza di aziende del distretto risicolo coinvolte nell'utilizzo delle informazioni prodotte per la gestione aziendale
- iv) Analisi dell'esperienza di aziende greche nell'utilizzo delle informazioni prodotte per la gestione aziendale
- v) Dimostrazione pratica dei prodotti sviluppati (uso Geoportale e AgriNotebook App)

Interverranno ricercatori del Consiglio Nazionale delle Ricerche (CNR-IREA), docenti della Facoltà Di Agraria dell'Università Degli Studi Di Milano, partner di progetto stranieri esperti di risicoltura e con la presenza in sala di autorità regionali, società private attive nella fornitura di servizi in agricoltura ed esperti nell'ambito dell'agricoltura di precisione.







IREA)

Studi di Milano)

- Il caso di studio Italiano della Lomellina







Agenda of the Italian Open Day at Regional level

	ERMES Open Days for regional users
	o dedicato agli end-user regionali del progetto ERMES, per illustrare e re i risultati principali ottenuti a scala regionale e locale.
	12 Gennaio 2017- Ore 09:30
	CNR-IREA, via Corti 12, Milano
	Programma della giornata
i)	Accoglienza e nozioni generali sul progetto ERMES
ii)	Presentazione dei risultati ottenuti nei tre anni di progetto (servizi offerti, prodotti sviluppati), con dimostrazione pratica dei prodotti sviluppati (Geoportale ERMES) e delle informazioni a valore aggiunto da essi derivabili (bollettini di resa, rischi, ecc.)
iii)	Discussione aperta circa l'utilità dei prodotti/servizi sviluppati, e le relative possibilità di continuazione e miglioramento
iv)	Raccolta dei feedback da parte degli utenti, attraverso la compilazione d appositi questionari











Annex II: List of participants

List of the participants of the Italian Open day at Local level

		EKMES approx.	Opernicus	icus ::	
		ERM	ERMES OPEN DAY		
Incontro pi	Incontro pubblico per illustrare	i risultati del progetto discutere del contribu	i risultati del progetto ERMES e le sue applicazioni nel dis discutere del contributo che può dare alle aziende risicole	illustrare i risultati del progetto ERMES e le sue applicazioni nel distretto risicolo della Lomellina e discutere del contributo che può dare alle aziende risicole	
	DOISa	14 14	14 Dicembre 2016		
Nome	Cognome	Organizzazione	Farma	e-mail	
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• List of participants of the Italian Open day at Regional level





PRESENTATION OF ERMES PROJECT TO REGIONAL END-USERS

CNR-IREA - Via Corti 12, Milano

12/01/2017

			Participan	ts	
Name	Surname	Organization	Signature	e-mail	telephone
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PRESENTATION OF ERMES PROJECT TO REGIONAL END-USERS

CNR-IREA - Via Corti 12, Milano

12/01/2017

	Participants				
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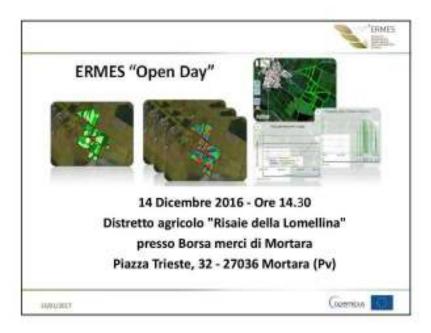




Annex III: Italian Open Day Presentations

Local Italian Open Day presentation



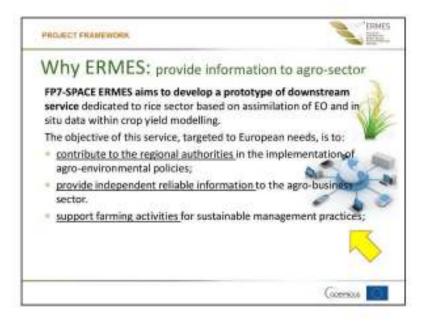






13-Jan-17

Agenda e interver	nti 🔪 🔪
14.30 – 15.00 Accoplienza e introduzione l	ERMES
 - Introduzione alla giornata (Prof. Roberto Co - Presentazione sintitica del progetto (Dr. Mi 15.00 – 16.00 Dimostrazioni dei "tools" 	
	ocek App. ERMES (Dz.s.s. Minnica Pape - CNII-IRE e Pocket N (Dr. Tornmaso Guarnieri - Università
16.00 – 16.45 Esperienze dell'utilizzo dei si	ervizi ERMES in aziende agricole
 III caso di studio Italiano della Lornellina Az. Recete Inaggio Zena (PV) – (Dr. Presente Az. Carlo Franchire Researce (PV) – (Dr. Alaertz III caso di studio Greco della regione di Salor Az. Fuenti Prantas (Ornito Plettina) Az fuence in Dependential Suttee of DEMITI Starvelocula – AUTH) 	D Cremu - CNR-IILA
16.45 – 17.00 Tavala Rotonda; domande e	: risposte
LANE2A02T	Guerran

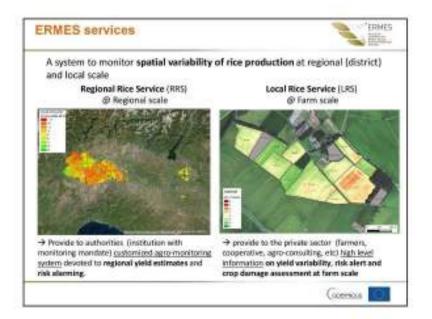






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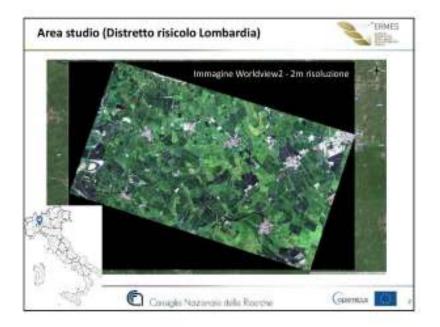






















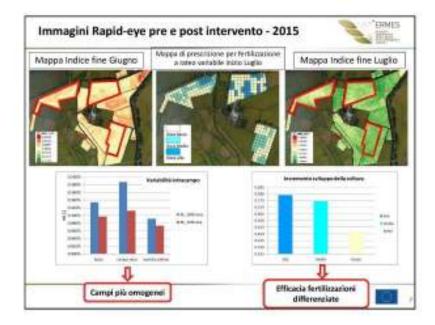


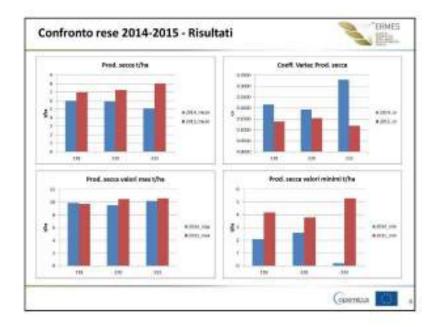






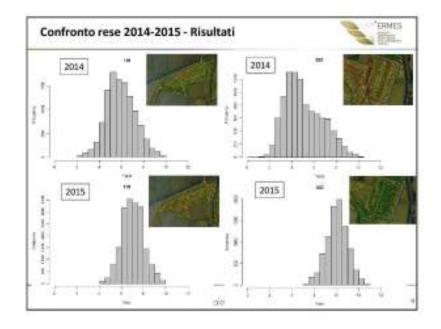


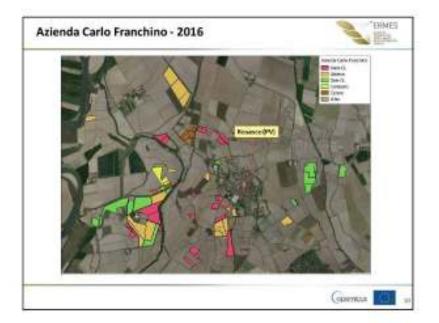








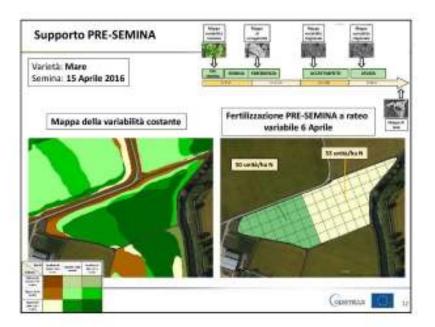






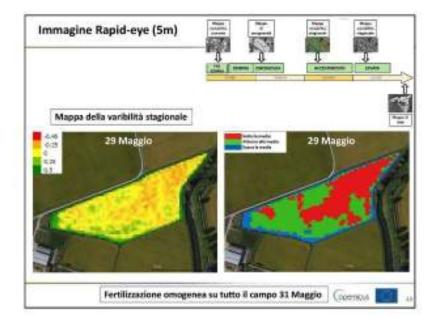


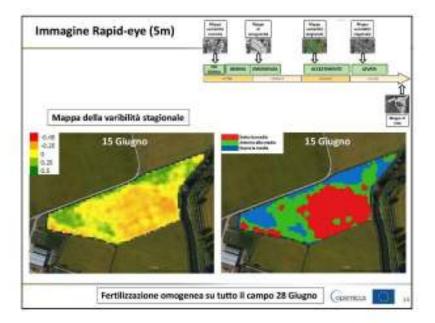






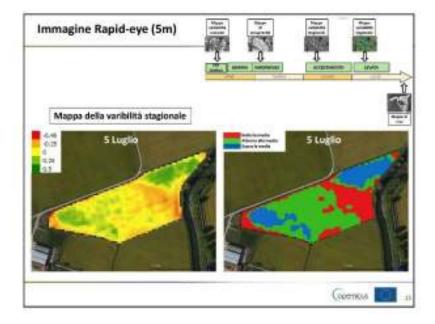


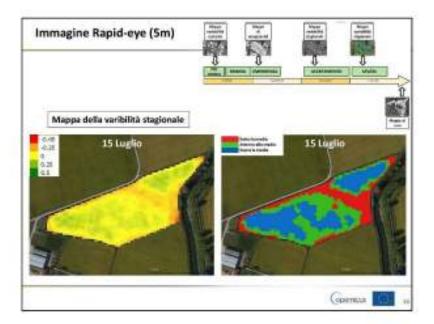






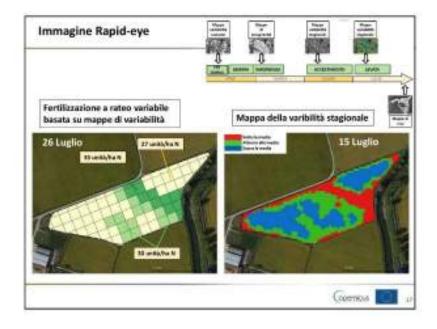


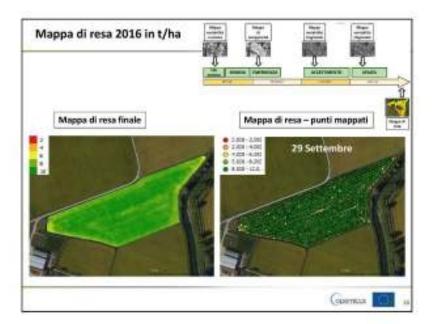






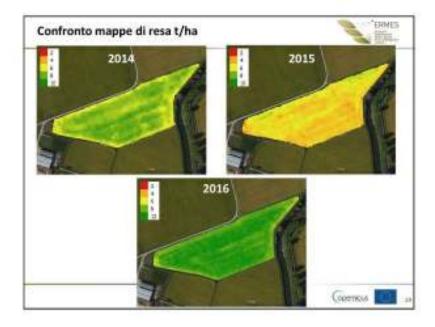


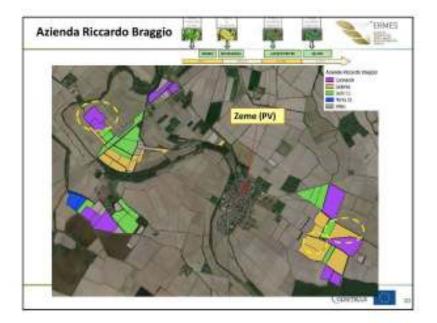






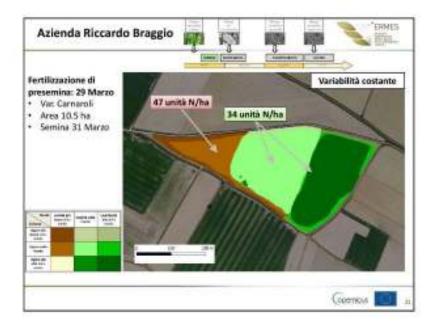


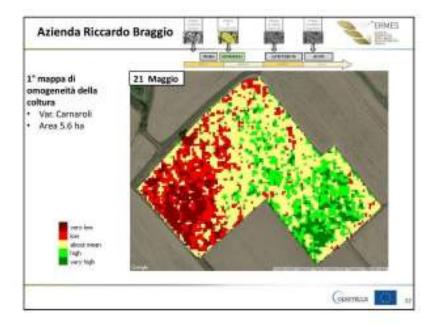






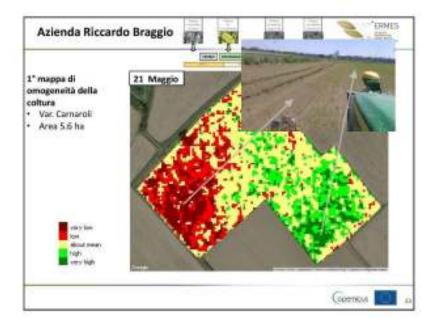


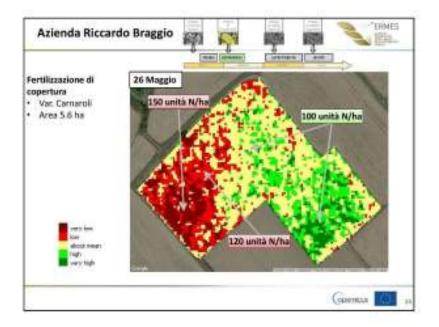






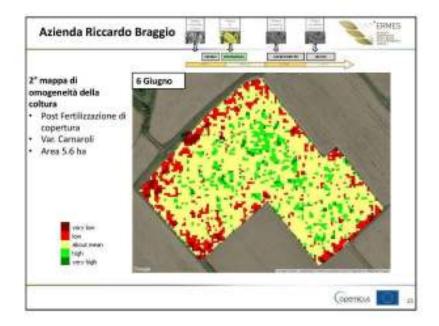


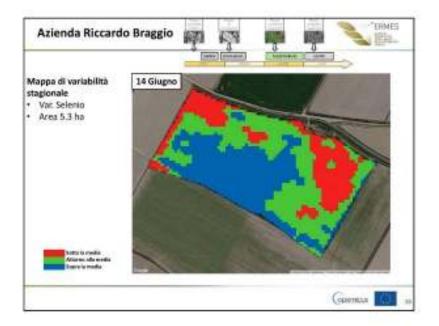






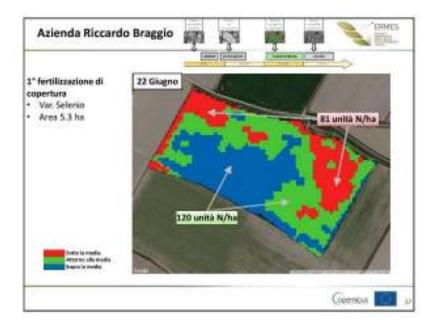


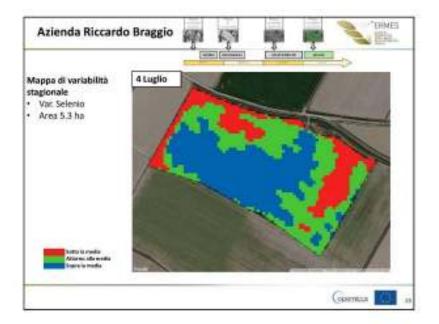






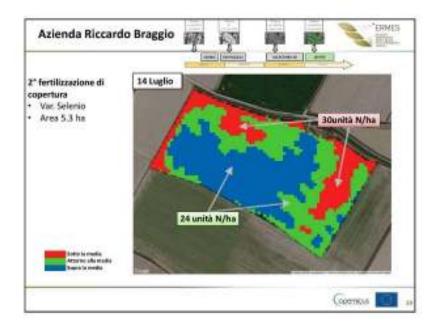








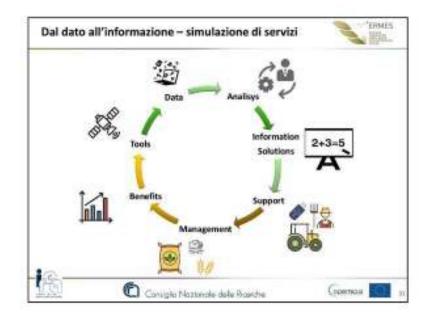


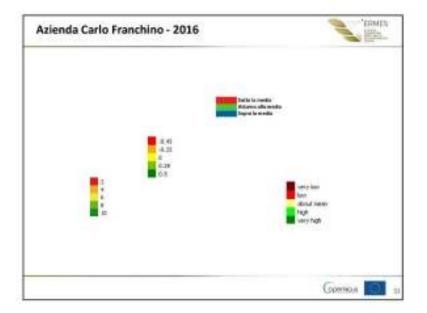






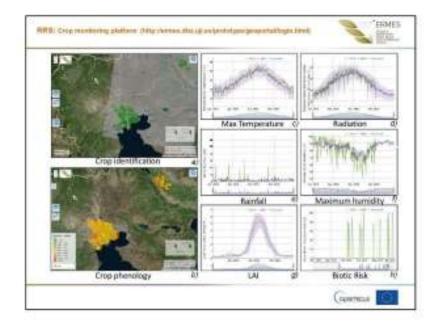


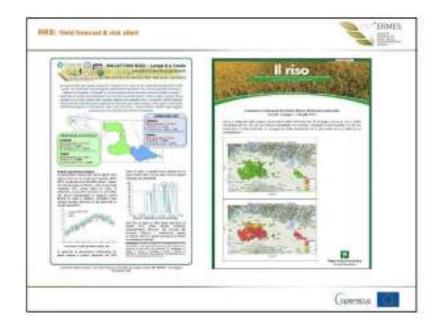








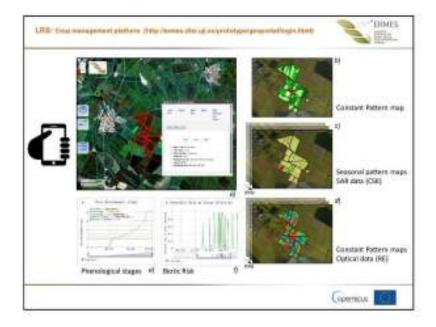












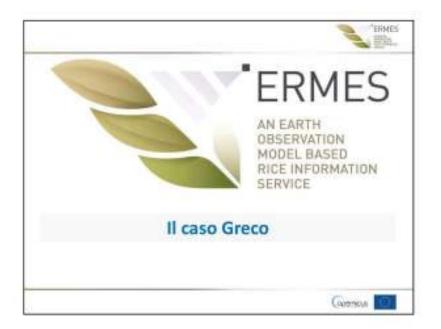


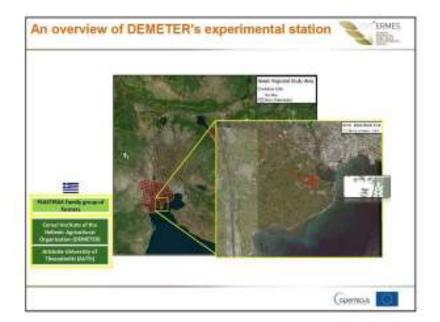








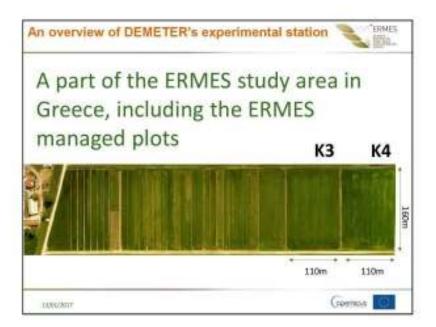






























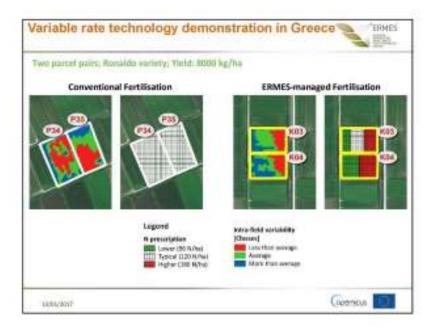












u	inventional fertilizat		114	£
	Type	kg/ho	N/ho	
Basic	30-10-10	400	120	
1ª Surface	AMIDAS (40-0-0)	300	120	
2 nd Surface	AMIDAS (40-0-0)	150	60	
Total	a		300	
ERA	NES-managed fortiliz	ation (K03 & K04	12	
	Type	kg/ha	N/ha	
Basic	30-10-10	400	120	
1 st Surface	AMIDAS (40-0-0)	240/300/450	137	
Surface	CONTRACTOR OF	Station Volter		
Total			257	





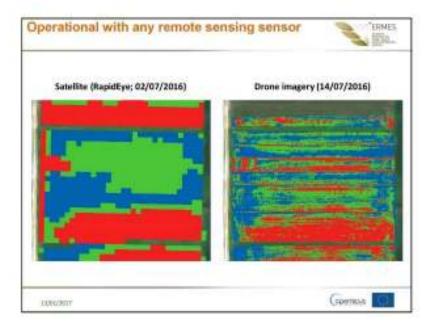
Ćo	oventional fertilization	tion (P34 & P35)		
	Type	kg/ha	N/ho	
Basic	30-10-10	400	120	
1 st Surface	AMIDAS (40-0-0)	300	120	
2 nd Surface	AMIDAS (40-0-0)	150	60	
Total			(300)	
ERM	ERMES-managed fertilization (K03 & K04)			Reduction
	Type	kg/ha	N/ha	N/ha of 1
Basic	30-10-10	400	120	
1# Surface	AMIDAS (40-0-0)	240/300/450	137	
2 nd Surface		-		
Total			257	

C	inventional fertilizat	tion (P34 & P35)		
	Type	kg/ha	N/ha	
Basic	30-10-10	400	120	
1ª Surface	AMIDAS (40-0-0)	300	120	
2 nd Surface	AMIDAS (40-0-0)	150	60	
Total			300	
ERN	NES-managed fortiliz Type	A CONTRACTOR OF	Q1	Reduction N/ha of 14
	Type	kg/ha	N/ha	N/ha of 14
Basic	30-10-10	400	120	
1 st Surface	AMIDAS (40-0-0)	240/300/450	137	
2 rd Surface	Contraction of the second	and the second		
Total			257	
	Profit from ERMES	management		
	Conventional	ERMES	Difference	
Cost (€/ha)	453	388	(65)	



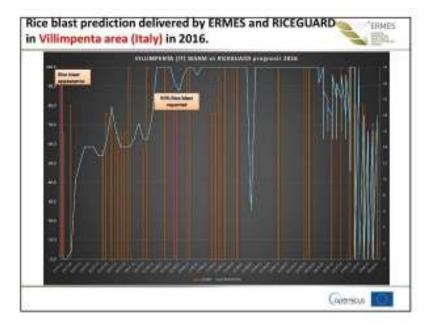


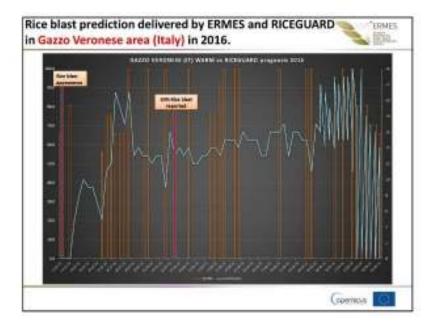
Cc.	oventional fertilizat	tion (P34 & P35)		
	Type	Ag/ha	N/ho	
Basic	30-10-10	400	120	
1 st Surface	AMIDAS (40-0-0)	300	120	
2 rd Surface	AMIDAS (40-0-0)	150	60	
Total			300	
ERA	IES-managed fertiliz	ration (KO3 & KD	4)	Reduction
	Type	kg/ha	N/ha	N/ha of 19
Basic	30-10-10	400	120	5
1# Surface	AMIDAS (40-0-0)	150/900/450	124	
2 ^{ed} Surface		-		
Total			244	
	Profit from ERMES	management		
	Conventional	ERMES	Difference	
Cost (6/ha)	453	370	(83)	





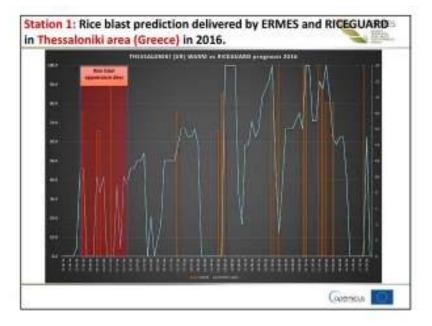


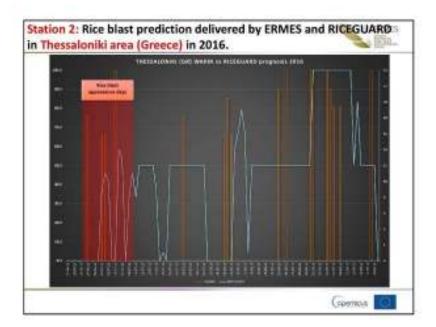
















Regional Italian Open Day









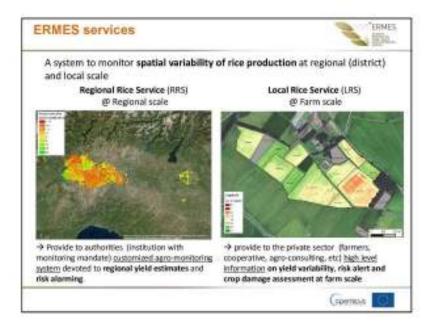
	Agenda e interventi
	09:30 - 09:45 Acceglienza e introduzione ad ERMES Introduzione allo giornata e retap sul progetto
	Former project (Mecci Bacchett)
•	09:45 – 11:00 Principali servizi e prodatti sviluppati nell'ambito dei progetto
•	Prodotti e servizi ERMES per applicazioni di monitoraggio a scale regionale)
	 Mappatura della anna anto ormonitoraggio degli allagamenti (Deneto Scoppione) Monitoraggio della stagione risicola da instagini subelitari (Lorenzo Basetto)
	 Applicación il modellistiche per la stima delle rese e del rischio biotico (hoterto Cantaloxieri)
	 Disseminazione dei risoltati: il geoportale SIVRS (Loveco Busetto)
•	11:00 – 21:25 Coffee Break
1	11:15 - 12:15 Discussione aperto
	Discussione circo i servizi/prodotti iliustrati, fa laro utilità e possibilità al continuazione e miglioramento (Facilitatori: Dr. Lorenzo Busetto – CNR IREA; Drosa Valentina Paganie Dr. Tommoro Guarnieri - Università di Milano)
•	12:15 - 12:45 Raccolta feedback e compilazione questionari
h	12:45 – 13:00 Chiusurp lavori – pronto presso mensa CNR-IREA
•	Extro material: Applicazioni ERMES o supporto delle asiende agricale
-	ususar Garros 🐨





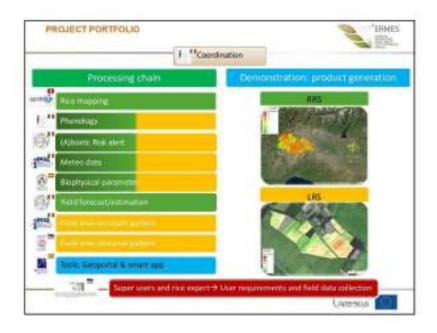








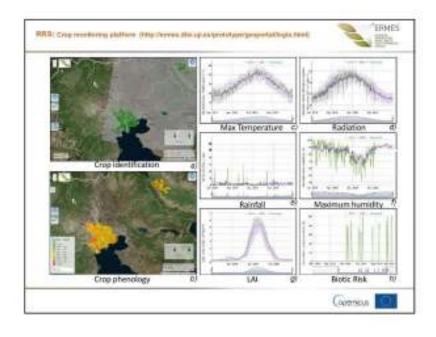


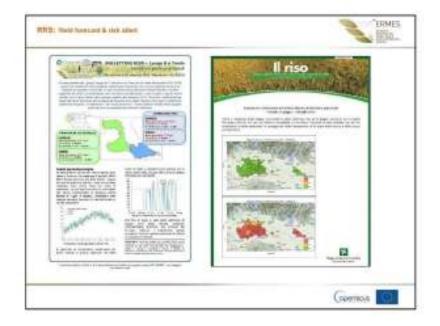








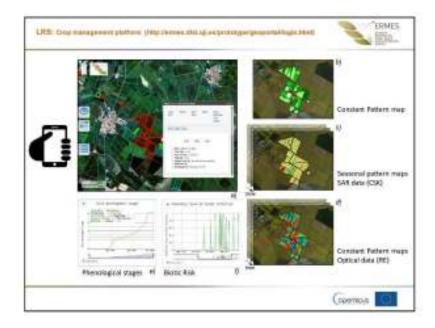








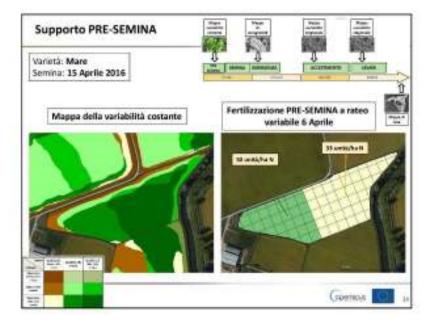






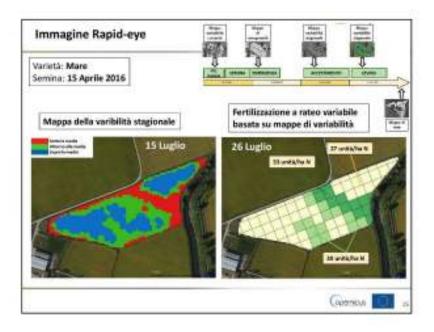


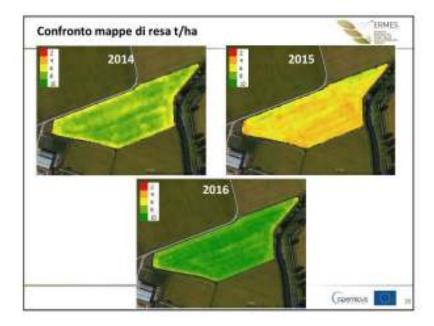


















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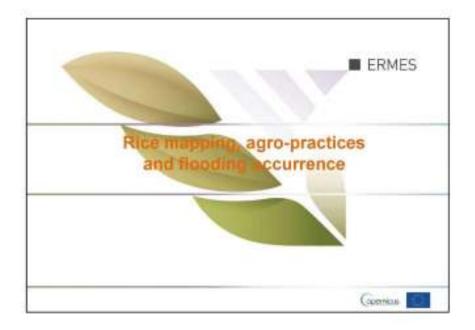








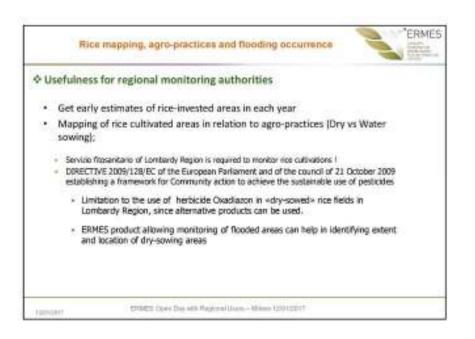


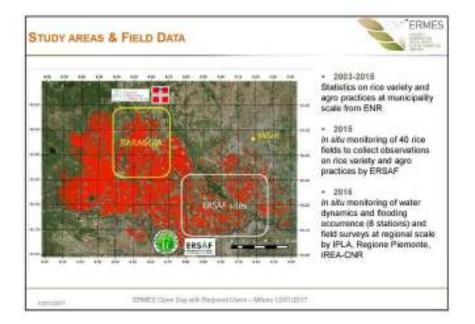






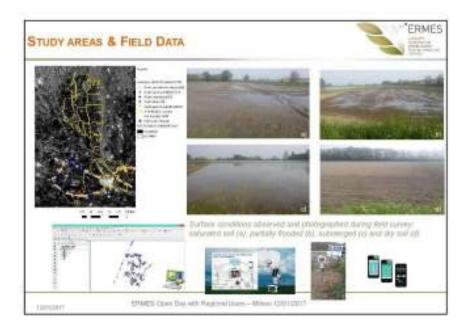


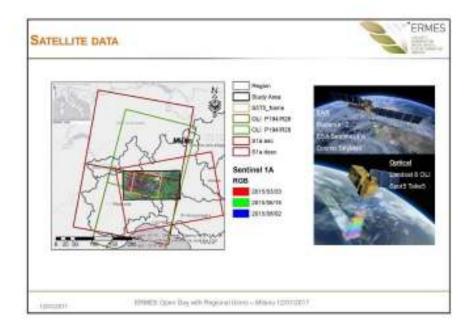






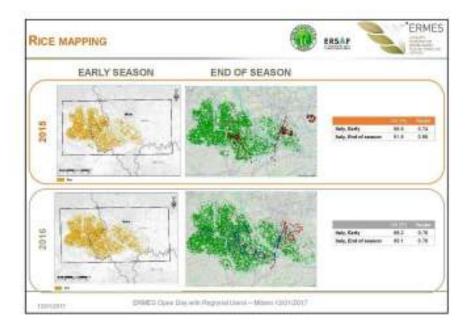


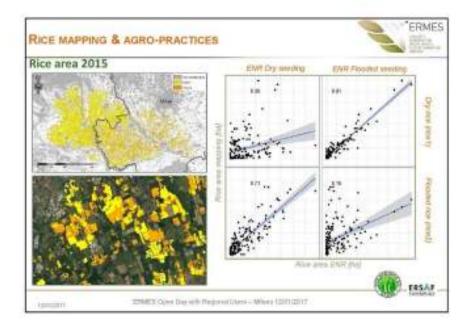








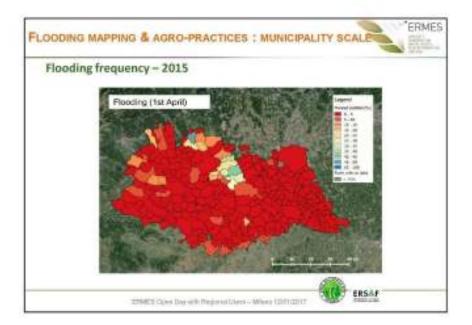






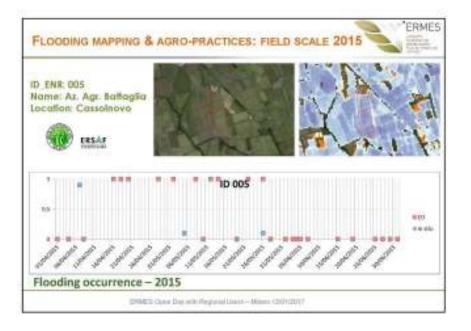


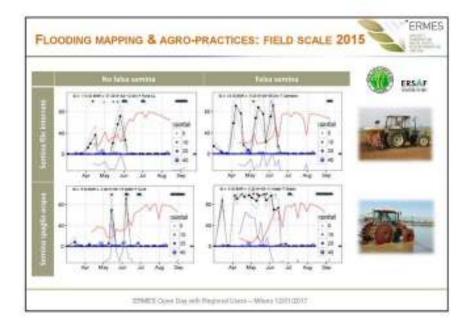






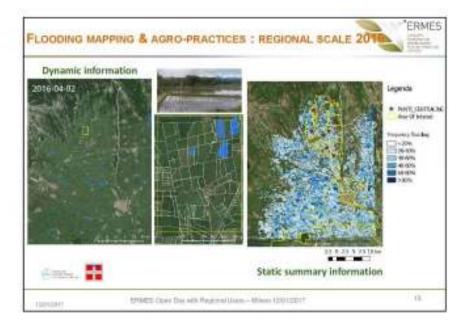












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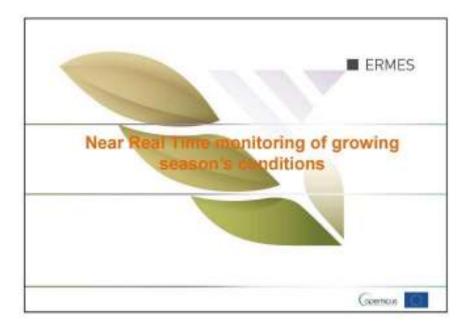
CONICL	USIONS ERME
P Rice	mapping
	Accuracy icar mapping > 00% also for the in season product (early mapping - mid July)
	Reliable information provided during the on-going season - necessary for managing and forecasting
	Spectral rice properties can provide information on agro-practises; presence/absence of water influences the
	satellite signal -> identification of flooded and dry sowing
Floo	ding mapping and monitoring
	Picoting mapping accuracy +32%
	In situ sensors allow the detection of short dry periods for rice agro-management
	lasues that say reduce detection accuracy: partially fooded fields and satellite data spakal resolution. That
	can be solved by post processing GIS analysis
	Comparison with field surveys by regional operators dater than June 2018) provided lower accuracy
	suggesting that water detection is most accurate at the early stages into influence of crop plants on the
	(langed)
	Possible to provide information on the use of water and apro-practices also at particil level

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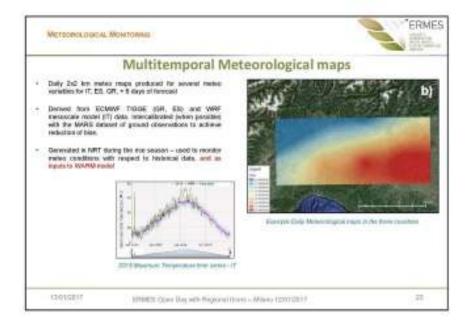


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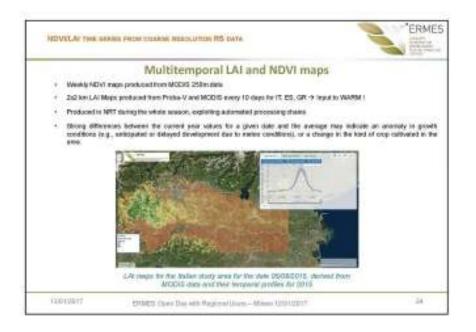


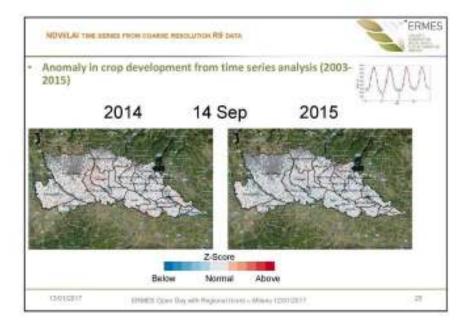






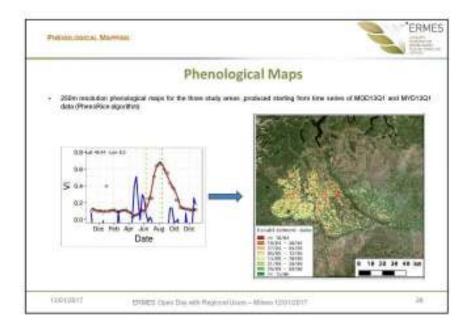








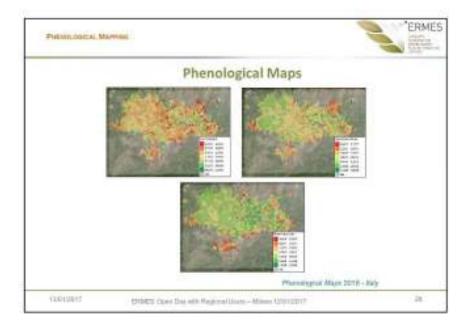


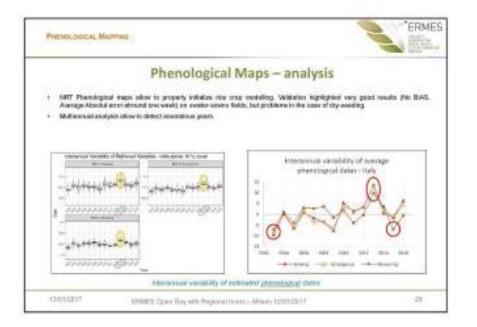


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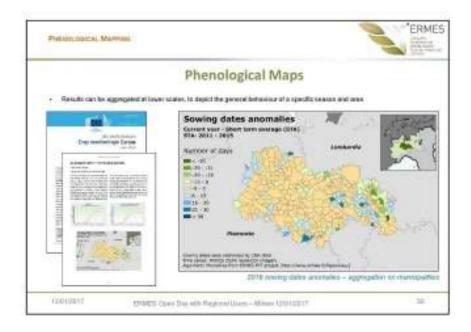


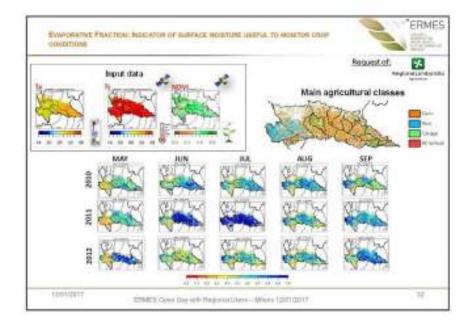






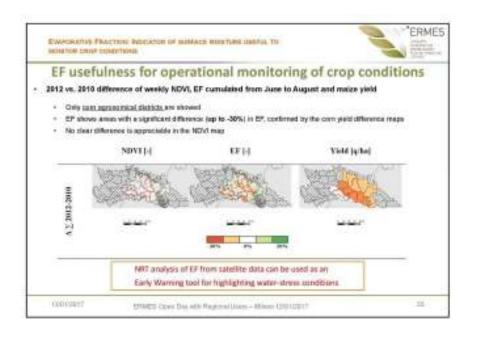


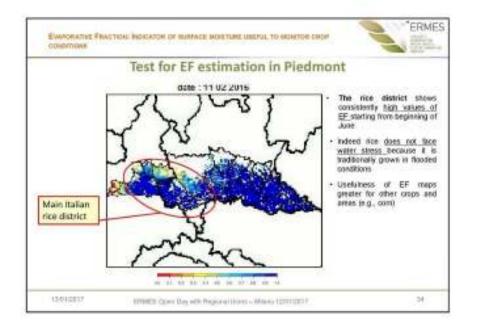
















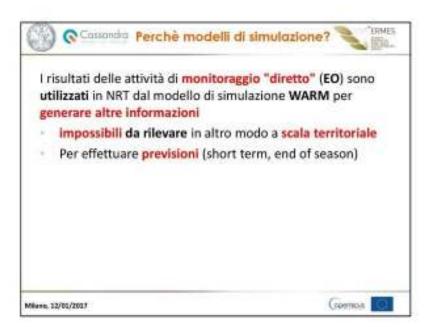
















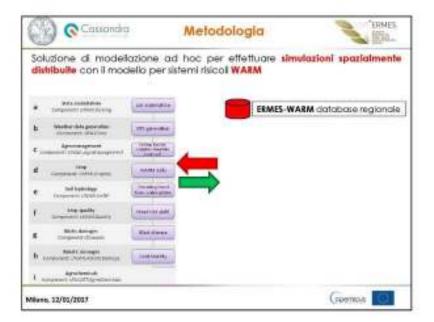








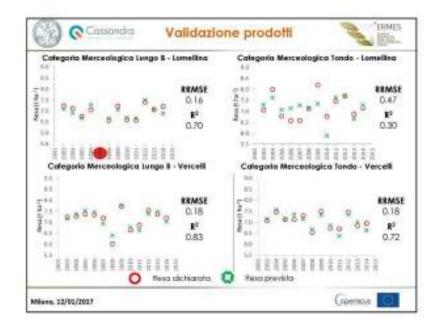
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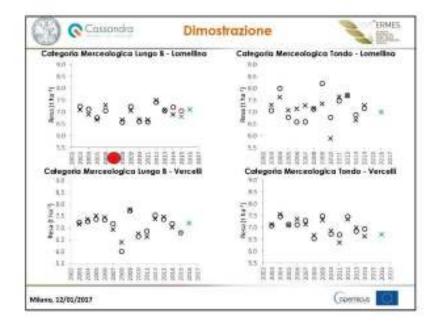






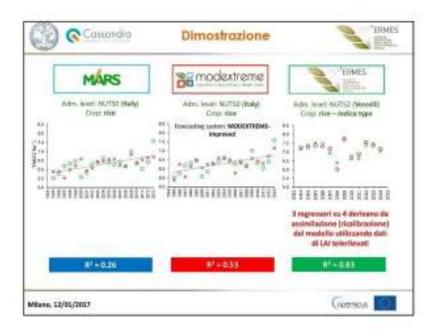








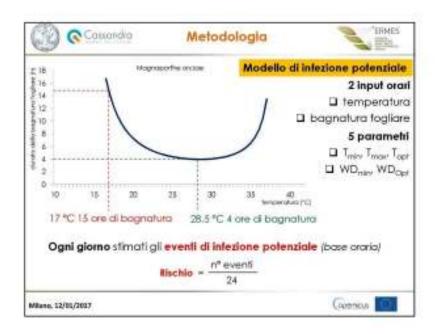


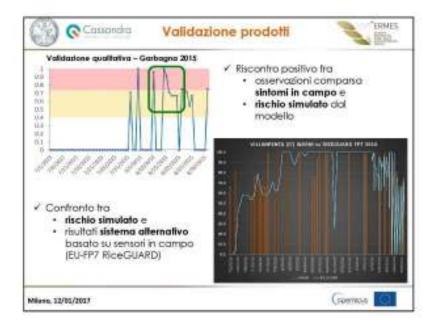














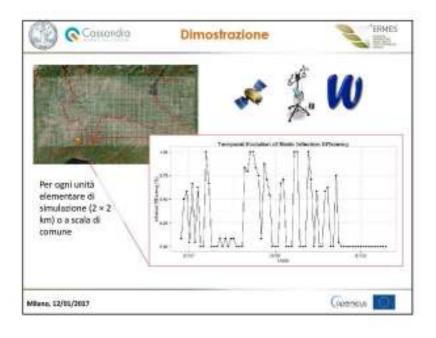








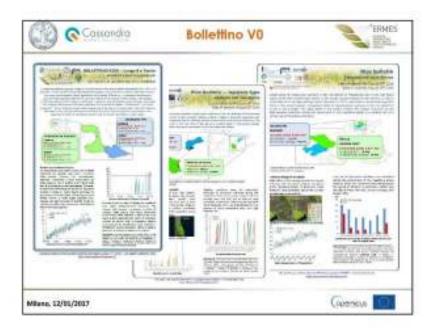


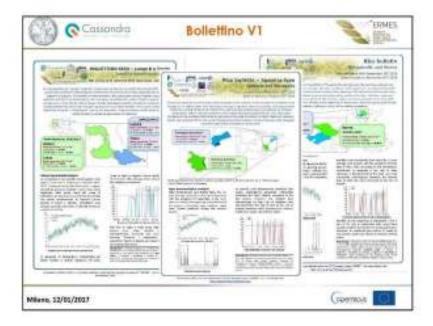








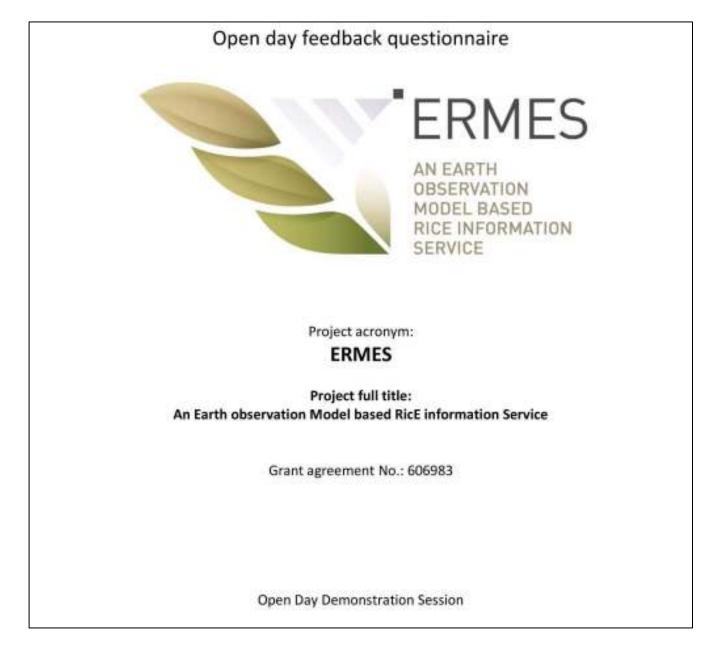








Annex IV: Italian Open Day Collected Questionnaires







ES	Work Package
1.	What is your profession? Is your main occupation in the sector of agriculture (activ farmer?)
2.	What was the size of the area you cultivated during the last 3 years?
201	4
201	5
201	6
3,	What was the average yield per ha of the rice paddies during the last thre years?
20	14
20	15
20	16
4.	What was the total amount of money you spent, per hectare, during the la cultivation period (including land rent)?
5.	What was your net profit per hectare during the last cultivation period?
	Please, write down which one of the services presented during this sessio comes first in mind

🗆 Yes

□ Maybe

2





Work Package 11

No

- 8. Which of the following services, presented to you in today's session, do you remember or do you think is the most important for you?
 - Plant growth stage prediction for supporting farming techniques (time for herbicide/fertilizer application)
 - Support the application of surface fertilization for increased and homogenous yield.
 - Creation of yield maps
 - Prediction for the product's sell value
 - Rice blast prediction
 - Weeds appearance prediction
- Please, tell us how you estimate the date of appearance of the different growth stages in rice cultivation (such as tillering, booting ect)
 - Empirically, by in situ observation of the fields
 - By counting the days after sowing
 - Other
- 10. Report the main way of supporting the surface fertilization applied in your rice fields
 - Empirically, by estimating the date of tillering and heading
 - By counting the days after sowing
 - I own remote sensing instruments attached on my tractor
 - I have implemented drone technology to create fertilization maps.
 - C Other





Work Package 11

- Please, report which methods, to your knowledge, are currently employed in the rice fields (yours or others) to predict rice blast?
 - By using in-field spore trapping equipment
 - By visual inspection of the rice plants and rice weeds
 - By watching the local weather forecasts
 - I have installed in-field compact weather stations
 - I received alerts and warnings issued by agro-chemicals company
 - I watch the official disease alerts and warnings issued by the authorities
 - Other (please specify):

12. Please, inform us on the availability of yield maps or forecasting yield maps in the rice fields

- □ There is no such possibility
- It is conducted empirically
- □ Through the use of a commercial system
- I do not know
- 13. How, according to your opinion, should the analysis and the implementation of the ERMES results be performed?
 - Directly, via a personal computer/table in a general form
 - Through an agro-consultant on behalf of ERMES service
 - Through agronomists of the cooperative who collaborate with ERMES
 - Through freelancer agronomists
 - Through local agronomists employed in the public sector
 - I don't know





Work Package 11

14. What is the best way to inform the ERMES service users?

- □ Using the web page/ geoportal
- 🗌 Via email
- U Via SMS
- Through an agro-consultant

15. What is your overall impression of the ERMES service?

- I am interested in all of the services, or in some of them, in order to monitor my fields.
- I have no interest
- Other, please specify:

16. Do you believe in the continuation of rice research projects, which implement new technologies such as remote sensing?

- □ Yes
- 🗆 No
- I don't know/ will not answer
- Using a scale from 1 to 5 evaluate the reasons why somebody should invest in the use of ERMES.

Rank the incentives for investing in using the ERMES services 1: most important - 5: least important

- Decrease/optimize agrochemicals usage in rice paddies
- Yield increase
- Accelerate the decision making process
- Ability to remotely monitor the paddy fields
- Other, please specify:





Work Package 11

18. Please choose the sum of money that you are willing to pay, per year and per hectare, for the ERMES services.

□ €0 (I am not interested)	□ €6
\Box ϵ 1	□ €7
□ €2	□ €8
□ G	□ €9
□ €4	□ €10
□ €	Different Sum

19. Please, tell us the preferred method of using the ERMES services.

- I would use the services if I could share the expenses with other users.
- I would only use the services if they were provided (for) free of charge through my cooperative.
- I would only use the services if they were provided for free through contract farming.
- □ I don't know/ will not answer.

20. Was the content of the session useful for you?

- Very useful
- □ Average
- Not very useful





Work Package 11

21. How would you grade the presentation of the ERMES service products?

- Very useful
- Average
- Below Average
- I did not like it
- 22. Do you think that the application of the ERMES technology should be included in the National Strategy of the CAP in your country?
 - Yes
 - No 🛛
 - 🗆 I do not know
- 23. Do you think that the application of the ERMES products in rice will reduce the cost of production?
 - No No
 - 🗆 Yes
 - 🗆 I do not know
- 24. Do you think that the application of the ERMES products in rice will allow you to apply for CAP subsidies related to sustainable agro-practices?
 - D No
 - □ Yes
 - I do not know

Thank you for your assistance

7









ERMES GEOPORTAL

SUS Usability Questionaire

	Strongly disagre	e			Strongly agree
 I think that I would like to use this system frequently. 	1	2	3	4	5
 I found the system unnecessarily complex. 					
	1	2	3	4	5
I thought the system was easy to use.					
	1	2	3	4	5
I think that I would need the support of a technical person to be	-				
able to use this system.	1	2	3	4	5
I found the various functions in this system were well integrated.					
	1	2	3	4	5
I thought there was too much inconsistency in this system.					
	1	2	3	4	5
I would imagine that most people would learn to use this system very		r v			
quickly.	1	2	3	4	5
8. I found the system very					
cumbersome to use.	1	2	3	4	5
9. I felt very confident using the					
system.	1	2	3	4	5
10. I needed to learn a lot of things	[1 1
before I could get going with this system.	1	2	3	4	5











SUS ERMES AgriNoteBook Usability Questionaire

	Strongly disagree	9e			Strongly agree
 I think that I would like to use this system frequently. 					
	1	2	3	4	5
 I found the system unnecessarily complex. 					
14	1	2	3	4	5
I thought the system was easy to use.					
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able to use this system.	1	2	3	4	5
I found the various functions in this system were well integrated.					
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I thought there was too much inconsistency in this system.					
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before I could get going with this system.	- 1	2	3	4	5





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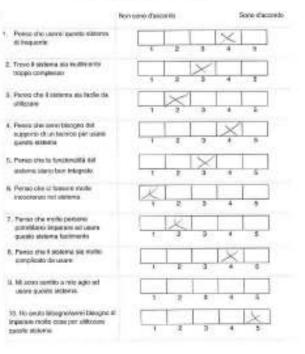
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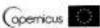












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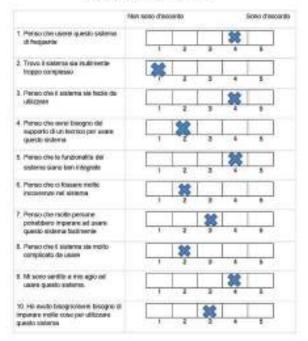
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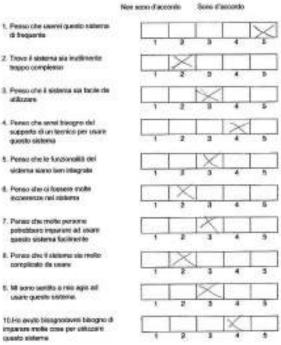
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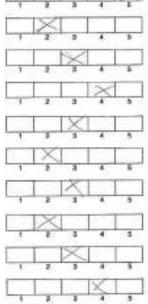
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Questionario sulla facilità di utilizzo









Annex V: Press report on "II Risicoltore"

Progetto europeo ERMES, presentati i risultati ottenuti

Si è tenuto presso la Borsa Merci di Mortara un incontro pubblico sui risultati ottenuti dal progetto europeo ERMES (www.ermes-fp7space.eu/it/homepa-

ge), alcuni dei quali erano già stati posti all'attenzione degli esperti del settore con i bollettini brusone (qui un e s e m p i o : h ttps://goo.gl/MJJa4q) e articoli dedicati su "II Risicoltore".

ERMES ha avuto lo scopo di sviluppare a supporto degli agricolto-

ri nuovi servizi basati su mappe satellitari, e nel corso della giornata sono intervenuti i responsabili scientifici del progetto (CNR e Facoltà di Agraria di Milano) e risicoltori lombardi i quali hanno mostrato come



hanno utilizzato le informazioni fornite a supporto delle fertilizzazioni. L'incontro ha visto anche la partecipazione di agronomi e risicoltori greci, anch'essi partner del

> progetto ed esperti nell'utilizzo di mappe satellitari per la creazione di mappe di prescrizione.

> Il dibattito scaturito nel corso della giornata con la vasta platea di risicoltori, agronomi, enti pubblici e fornitori di servizi in agricoltura ha evidenziato le potenzia-

lità nell'utilizzo di mappe ottenute da satellite per guidare delle fertilizzazioni a rateo variabile, e ha gettato le basi per i prossimi sviluppi progettuali nell'ambito dell'agricoltura di precisione.